

Falling Dominos Lab
Honors Physics
30 Points Total

The goal of this lab is to determine the spacing between dominos that produces the maximum fall speed. We will set up the dominos with various spacings between successive dominos, and record the time for all the dominos to fall. We will then graph the total distance of the dominos and total time it took for all the dominos to fall, and interpret the graph to determine the spacing that produces the maximum fall speed.

Instructions:

1. Take 20 dominos that have the same thickness from the boxes, a meter stick, and a timer.
2. Set up a chart with the following headings:
 - a. Domino spacing. We will use five different spacings: 1.00 cm, 1.50 cm, 2.00 cm, 2.50 cm, 3.00 cm.
 - b. Number of dominos. For each of the five spacings, we will set up and knock down 10, 15, and 20 dominos.
 - c. Total length. Record the total length of the line of dominos for each of the 15 trials.
 - d. Total time. Record the total time it took for all the dominos to fall for each of the 15 trials.
 - e. Average velocity. Divide the total length by the total time to determine the average velocity for each of the 15 trials.
3. Graph each (time, length) pair on a coordinate system.
4. Determine the spacing that produces the maximum fall speed.

Hints:

1. All the dominos must be parallel to each other, so it may be helpful to use the meter stick to align the dominos.
2. Measure the spacing between dominos from the front edge.
3. Be careful with your IDs so that you do not accidentally knock down the dominos.
4. If you feel there are data points missing, perform more trials until you are satisfied.

Rubric:

1. Procedure (4 points). Write a short summary of the steps you took to perform the experiment.
2. Chart (7 points). Must be complete and neat, and contain all the above data.
3. Graph (4 points). Must be complete and neat, and have a function of “best fit” through the data.
4. What is the spacing that produces the maximum fall speed (3 points)? Justify your answer with your data and/or graph (4 points).
5. Name two specific sources of error (2 points) and one way for each that you could minimize the error (2 points).
6. Summary sentence(s) of the experiment (4 points). Write a short summary of the experiment, which includes what you were looking for, what you did, and your result.